

Impact of Covid-19 on Workplace Practice and Psychology of Dental Health Care Professionals

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ABSTRACT

Introduction: the spread of Covid-19 has created public health crisis all over the world leading to a lot of confusion and chaos among the general public and health care professionals.

Aim: The focus of the study was to analyse if any modifications were made by the dentists in their clinical practice and to evaluate if they had faced any Anxiety and Insomnia related issues due to the pandemic outbreak.

Methods: the study was conducted via an e-questionnaire which included questions regarding the demographic data, symptoms related to anxiety and insomnia which were evaluated using the General Anxiety Disorder scale and Insomnia Severity Index respectively.

Results: out of 195 participants, 76.5% of dentists have received training on the necessary precautions to be followed during the pandemic. Most of them have worked for more than 35hrs a week and 97.9% were vaccinated against Covid-19. The results also revealed that majority of dentists experienced mild anxiety and insomnia. Moderate and severe levels of anxiety was observed among females. A considerable number of dentists have faced financial struggles among which 31.7% of them have managed to find other sources of income.

Conclusion: based on the results procured from this study we can summarise that even though most of the dentists have a positive understanding regarding the safety measures to be taken into consideration during the pandemic, mild to moderate levels of anxiety and insomnia were observed amongst them.

Keywords: Covid19; Anxiety; Insomnia; Dentists; Mental Health.

Introduction

A novel outbreak of pneumonia known as Covid-19 originating primarily from China has created public health crisis on a global level caused by the SARS-COV-2¹. The disease has a rampant spreading nature. This forced the WHO to announce it as a pandemic outbreak. The world was under the grip of this virus soon after its emergence around 11th March 2020¹. SARS-COV-2 is a single-stranded RNA virus known to chiefly attack the hosts' upper respiratory system². The virus chiefly enters the human body via the Angiotensin- Converting Enzyme 2 (ACE-2) receptor. Since the mode of transmission of the virus is via respiratory droplets and through direct or indirect contact with the affected individuals, it has become hard to control and prevent the spread of the disease².

The clinical severity of the disease can range from mild to severe symptoms. It commonly presenting itself with fever, cough, shortness of breath, sore throat, loss of smell and taste, and causing death in immunocompromised individuals².

To mitigate the spread of the disease a nationwide lockdown was announced by the Indian government around the end of March 2020¹. Given the wide spreading nature of the disease, dental health care providers are at maximum risk of nosocomial infection as the nature of work is around the oropharyngeal

region¹. Also, the risk increases even more as there will be constant contact with saliva, body fluids, blood etc². This has forced many dental and medical health care facilities to perform only emergency procedures. The important reason behind this was that as the use of handpiece and ultrasonic instruments unavoidably generates massive aerosols leading to the spread of the contagion³. Even though maintaining adequate distance and using negative pressure cabins is beneficial, aerosol production is inevitable. Therefore, a standard treatment regimen cannot be implemented⁴.

To combat the outbreak dentists were forced to use PPEs, anti-retraction handpieces, high volume saliva ejectors, rubber dams, implement frequent disinfection, and provide patients with pre-procedural mouthwashes³. Covid-19 being a new disease has created a lot of confusion and chaos among the general public and health care professionals⁵. Since DCI had recommended avoiding all elective procedures, many dental institutes and private clinics were forced to shut down⁵.

Dentistry being on the list of high-risk profession has likely put dental health care professionals during the pandemic at an increased risk of mental health issues such as fear, anxiety, stress, etc. thereby impacting the work-life balance¹. The rationale behind this ranges from fear of losing the job, vulnerability to infection,

relative decrease in patient flow, escalating demand for equipment, and the heightened need for infection control to financial insecurity^{1,6,7}.

Previous pandemic studies have shown that health care workers have been significantly facing mental-health related issues due to the nature of disease spread and the need to evolve and upgrade the practice setup². Mild anxiety and fear are natural emotions which at a certain level can be protective and safeguarding⁶. However, persistent anxiety and stress have been shown to increase the rate of panic attacks and the likeliness to make inaccurate decisions leading to poor delivery of health care thereby affecting work life^{8,9,10}. Thus, we aimed to evaluate the level of anxiety and any sleep-related issues among dental health care professionals across India.

Materials and Methods

A cross-sectional e-questionnaire study was conducted after approval from the Institutional Ethics (JSSDCH IEC Research Protocol No: 37/2021) committee via e-form that consisted of questions which were circulated among dentists across India via a link through WhatsApp, email, and other social networks.

The inclusion criteria were the dentists' who are registered under the Government of India and the

exclusion criteria were the dentists' who are not willing to participate. 195 eligible dentists were included in the study based on their consent to participate in the study.

Study Tool and Administration:

Data was collected through a self-designed structured online questionnaire survey tool (Google form) which had two sections. The consent was obtained by asking their willingness to participate in the study at the beginning of the questionnaire. The first section included demographic information (age, gender, and practice history). The second section include the 33 questionnaire was grouped into 5 different segments:

1. General and demographic data (gender, years of practice, etc.) (Format-1)
2. Modifications made in clinical practice (Format-1)
3. Questions to evaluate the anxiety level using General Anxiety Disorder scale (GAD) (Format-1)
4. Questions to evaluate sleep disturbances using Insomnia Severity Index (Format-1)
5. Methods in which the problems are met (Format-1)

A pilot study was conducted among 25 dentists and the response was evaluated before proceeding with the main study.

FORMAT-I: Website e-questionnaire survey of the study.

Questions	Option
Demographic Data	
Mail id	
Would you like to participate in this study	- Yes - No
Gender	- Female - Male - Others
Educational qualification	-BDS -MDS -PHD
Nature of work	-Private Practice -Associated with dental institute -Both of above
Are you vaccinated against covid-19 virus?	- Yes - No
Modifications Made in Clinical Practice	
Have you received any training on the precautionary measures to be followed during Covid-19?	Yes No
Weekly working during the Covid-19 pandemic?	<25 hours 25-35 hours >35 hours
What precautionary measures do you follow to prevent from contracting the virus?	- Surgical mask - N95 respirator - 3M Half face Reusable Respirator

How often do you change your mask?	<ul style="list-style-type: none"> - After every patient - Everyday - Use for more than a day
How often do you dispose of the PPE kit?	<ul style="list-style-type: none"> - After every patient - Everyday - Use for more than a day
When was PPE kit not used?	<ul style="list-style-type: none"> - Always use PPE Kit - When PPE was not available - When it interferes with work - When it's too hot
How do you minimize the generation of biological contaminants?	<ul style="list-style-type: none"> - By using LASER - By using Digital dentistry - By providing Pre-Procedural mouth rinses to patients - By using chemical disinfectants - By incorporating combinations of the above-mentioned methods
Did you encounter any shortage in PPE kits, Dental materials or disinfectant solutions?	<ul style="list-style-type: none"> - Yes - No
Did you face any financial struggles over the last 1 year due to Covid-19?	<ul style="list-style-type: none"> - Yes - No
Did you experience any of the following signs and symptoms?	<ul style="list-style-type: none"> - Increased Sweating - Dry mouth - Flushing in face - Palpitation - None of the above
Did you experience any changes in the mental and physical health status during lockdown?	<ul style="list-style-type: none"> - Only physical health affected - Only mental health affected - Both physical and mental health affected - No change in physical and mental health

Evaluating the Anxiety Level Using GAD-7 Scale

Feeling nervous, anxious or on edge	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Not being able to stop / control worrying	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Worrying too much about different things	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Trouble relaxing	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Being so restless that it's hard to sit still	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Become easily annoyed / irritable	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day

Feeling afraid something awful might happen	<ul style="list-style-type: none"> - Not at all - Several days - More than half the days - Nearly all day
Evaluating Sleep Disturbances Using Insomnia Severity Index	
Difficulty in falling asleep	<ul style="list-style-type: none"> - None - Mild - Moderate - Severe - Very severe
Difficulty staying asleep	<ul style="list-style-type: none"> - None - Mild - Moderate - Severe - Very severe
Problems waking up too early	<ul style="list-style-type: none"> - None - Mild - Moderate -Severe - Very severe
How SATISFIED/DISSATISFIED are you with your current sleep pattern?	<ul style="list-style-type: none"> - Very satisfied - Satisfied - Moderately satisfied - Dissatisfied - Very dissatisfied
How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?	<ul style="list-style-type: none"> - Not at all noticeable - A little - Somewhat - Much - Very much noticeable
How WORRIED/DISTRESSED are you about your current sleep problem?	<ul style="list-style-type: none"> - Not at all worried - A little - Somewhat - Much - Very much worried
To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g., day time fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) CURRENTLY?	<ul style="list-style-type: none"> - Not at all interfering - A little - Somewhat - Much - Very much interfering
Methods in Which the Problems Are Met	
How do you manage your anxiety related problems?	<ul style="list-style-type: none"> - Shout at other people - Seek medical advice - Through meditation, yoga, exercise or distracting the mind - Others
How do you overcome your sleep related issues?	<ul style="list-style-type: none"> - Seek physician's advice - Through self-medication - Through meditation or exercise - Others
If you had faced financial struggles, how did you manage them?	<ul style="list-style-type: none"> - By increasing the working hours - Finding other source of income - By charging the patient's higher fee - Others

The Generalized Anxiety Disorder (GAD-7) questionnaire is a seven-item, self-report anxiety questionnaire designed to assess the dentist’s health status¹¹.

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of “not at all,” “several days,” “more than half the days,” and “nearly every day.” GAD-7 total score for the seven items ranges from 0 to 21.

- 0–4: Minimal anxiety
- 5–9: Mild anxiety
- 10–14: Moderate anxiety
- 15–21: Severe anxiety

The ISI is a 7-item self-report questionnaire assessing the nature, severity, and impact of insomnia. The Insomnia Severity Index has seven questions. The seven answers are added up to get a total score. Total score categories range from 0-28.

- 0–7: No clinically significant insomnia
- 8–14: Subthreshold insomnia
- 15–21: Clinical insomnia (moderate severity)
- 22–28: Clinical insomnia (severe)

Data Analysis

The SPSS software was used to perform the analysis on the data (ver. 25.0). Statistical analysis used: All the data were entered in the MS-excel and the results were analysed using SPSS version 22.0 software. For the purpose of expressing the data, descriptive indices such as mean and standard deviation were utilized. Chi-Square Tests was applied for the comparison between various variables where the level of significance was determined to be 0.05.

Results

Demographic Data:

The 1st part of the questionnaire reflects the demographic and occupational history of the study subjects. Out of 195 participants (60.3%) were female and (39.6%) were males of which most of them have completed their MDS (51%). 57.2% of the dentists were associated with an educational institute & 97.9% of them were vaccinated against covid-19.

Work Place Practice Modifications:

The outcome of the study revealed that 76.5% of dentist received training on the precautionary measures to be followed during the pandemic and most of the dentists (43.2%) worked for >35hrs/week. With concern regarding personal protection, N-95 masks were used predominantly and most of them changed their masks (66.4%) and PPE kits(49.6%) every day. 57% of them stated that they had used PPE kits every day. The results also showed that dentists (59.2%) have encountered a shortage in PPE kits, disinfectants, and dental materials.71.2% faced financial struggles throughout the pandemic.

Physical & Mental Health of Participants:

44.4% of the dentists have faced psychological and encountered symptoms such as increased sweating (34.02%) and dry mouth (14.43%). Also, 6.7% of dentists faced all the symptoms such as increased sweating, palpitation, flushing and dry mouth.

Evaluating anxiety and insomnia:

Anxiety and Insomnia were evaluated using the GAD-7 scale and Insomnia Severity Index^{10,11}.

The results suggested that 52.1% of the study population experienced mild anxiety and mild insomnia (43.3%). Also, 8.2% have been affected by moderate levels of anxiety and insomnia (8.8%). [Figure 1 and 2].

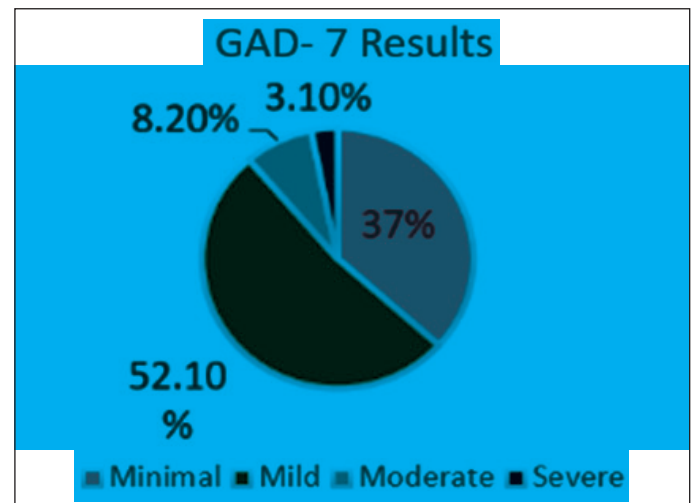


Figure 1. Anxiety levels of Dentists measured using GAD-7 scale.

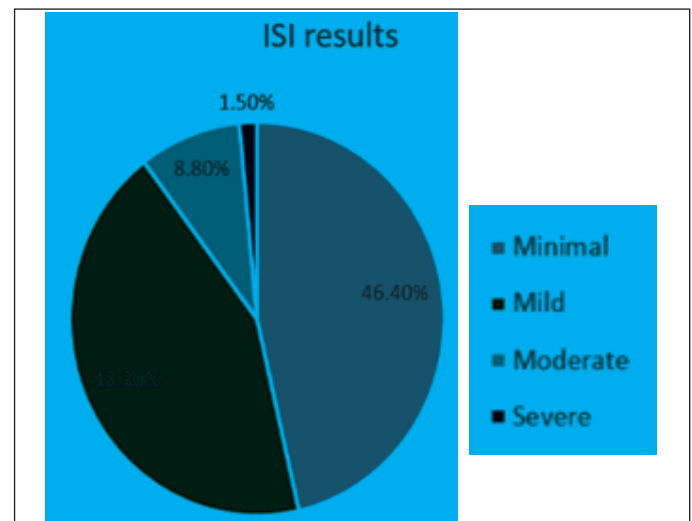


Figure 2. Insomnia levels of Dentists measured using ISI scale.

Cross tabulation:

Cross tabulations were done to determine the level of anxiety and insomnia pertaining to gender, educational qualification, and duration of work. The results revealed the following:

Gender- Regarding anxiety levels, while 49.6% of females and 55.8% of males experienced mild levels

of anxiety, females showed a higher percentage (9.4%) than males (6.5%) in the case of moderate anxiety. On the other hand, concerning insomnia levels, 45.5% of males and 41.9% of females reported mild insomnia, while moderate insomnia was more prevalent among females (10.3%) than males (6.5%). Additionally, the study found that females suffered from severe levels of anxiety (3.4%) and insomnia (2.6%). [Table - 1, 2]

Educational qualification- Dentists who have obtained their master’s degrees exhibited mild levels of anxiety (61.6%) and insomnia (50.5%), while those who had completed their BDS had moderate levels of anxiety (12.1%) and insomnia (9.9%). The results

Table 1. Comparative evaluation of anxiety amongst males and females.

Crosstab					
Male - Female		Gender		Total	
GAD	0-4	Count	27	44	71
		% within gender	35.1%	37.6%	36.6%
	5-9	Count	43	58	101
		% within gender	55.8%	49.6%	52.1%
	10-14	Count	5	11	16
		% within gender	6.5%	9.4%	8.2%
	15-21	Count	2	4	6
		% within gender	2.6%	3.4%	3.1%
	Total	Count	77	117	194
		% within gender	100.0%	100.0%	100.0%

Table 2. Comparative evaluation of insomnia amongst males and females.

Crosstab					
Male - Female		Gender		Total	
ISI	0-7	Count	37	53	90
		% within gender	48.1%	45.3%	46.4%
	8-14	Count	35	49	84
		% within gender	45.5%	41.9%	43.3%
	15-21	Count	5	12	17
		% within gender	6.5%	10.3%	8.8%
	22-28	Count	0	3	3
		% within gender	0.0%	2.6%	1.5%
	Total	Count	77	117	194
		% within gender	100.0%	100.0%	100.0%

also indicated that BDS graduates had severe levels of insomnia, whereas dentists who had finished their MDS experienced severe levels of anxiety. [Table -3, 4].

About the duration of work- Dentists who worked between 26-35 hours per week reported experiencing mild levels of anxiety (60.3%) and insomnia (49.2%). In contrast, those who worked more than 35 hours per week suffered from moderate anxiety (11.9%) and insomnia levels (13.1%). [Table - 5, 6]

Table 3. Comparative evaluation of anxiety based on educational qualification.

Crosstab						
		Education			Total	
		BDS	MDS	Ph D		
GAD	0-4	Count	39	29	3	71
		% within education	42.9%	29.3%	75.0%	36.6%
	5-9	Count	39	61	1	101
		% within education	42.9%	61.6%	25.0%	52.1%
	10-14	Count	11	5	0	16
		% within education	12.1%	5.1%	0.0%	8.2%
	15-21	Count	2	4	0	6
		% within education	2.2%	4.0%	0.0%	3.1%
	Total	Count	91	99	4	194
		% within education	100.0%	100.0%	100.0%	100.0%

Table 4. Comparative evaluation of insomnia based on educational qualification.

Crosstab						
		Education			Total	
		BDS	MDS	Ph D		
ISI	0-7	Count	45	41	4	90
		% within education	49.5%	41.4%	100.0%	46.4%
	8-14	Count	34	50	0	84
		% within education	37.4%	50.5%	0.0%	43.3%
	15-21	Count	9	8	0	17
		% within education	9.9%	8.1%	0.0%	8.8%
	22-28	Count	3	0	0	3
		% within education	3.3%	0.0%	0.0%	1.5%
	Total	Count	91	99	4	194
		% within education	100.0%	100.0%	100.0%	100.0%

Table 5. Comparative evaluation of anxiety based on duration of work.

Crosstab						
			Duration of work			Total
			<25	26-35	35+	
GAD	0-4	Count	25	16	30	71
		% within duration of work	53.2%	25.4%	35.7%	36.6%
	5-9	Count	21	38	42	101
		% within duration of work	44.7%	60.3%	50.0%	52.1%
	10-14	Count	1	5	10	16
		% within duration of work	2.1%	7.9%	11.9%	8.2%
	15-21	Count	0	4	2	6
		% within duration of work	0.0%	6.3%	2.4%	3.1%
Total	Count	47	63	84	194	
	% within duration of work	100.0%	100.0%	100.0%	100.0%	

Table 6. Comparative evaluation of insomnia based on duration of work.

Crosstab						
			Duration of work			Total
			<25	26-35	35+	
ISI	0-7	Count	30	27	33	90
		% within duration of work	63.8%	42.9%	39.3%	46.4%
	8-14	Count	16	31	37	84
		% within duration of work	34.0%	49.2%	44.0%	43.3%
	15-21	Count	1	5	11	17
		% within duration of work	2.1%	7.9%	13.1%	8.8%
	22-28	Count	0	0	3	3
		% within duration of work	0.0%	0.0%	3.6%	1.5%
Total	Count	47	63	84	194	
	% within duration of work	100.0%	100.0%	100.0%	100.0%	

Overcoming financial and anxiety-related issues: The majority of the dental health care professionals have agreed that meditation, yoga, and exercises have helped them get over anxiety (58.4%) and sleep-related issues (45.6%). Also, 31.7% of dentists have found alternative sources of income to help them handle their financial difficulties.

Discussion

Many studies in the past have declared that dentistry is a stressful job. As the pandemic exacerbated the situation, additional focus must be given to dentists regarding their health. Thus, this study gives an insight into the consequences of the pandemic on the mental health of dental health care professionals and the modification adopted by them in their practice during the time. To a large extent, the study focuses on the level of anxiety and insomnia experienced by them using two scales namely: The General Anxiety scale (GAD-7) and the Insomnia Severity Index (ISI) respectively.

From the outcome obtained from the study, it is seen that the health care professionals are well aware of the precautionary measures that are to be adopted during the pandemic i.e., 97.9% of them were vaccinated. Most of them were known to use N-95 respirators (65.9 %) and PPE kits (57%) which were concurrent with the study carried out by S. Banaee et al and by incorporating combinations of various methods such as using digital dentistry, providing patients with pre-procedural rinses, and using chemical disinfectants to cut down the spread of the contagion⁴.

One of the important findings in the study was that mild levels of anxiety and insomnia were noted among dentists associated with both institute and private practice. Whereas, moderate levels of anxiety (10.9%) and insomnia (10.9%) were observed among dentist running private practices. These varying levels could be due to the fear of shutting down practice, which could have been their primary source of income. It was also observed that dentists' physical and mental health were affected with a majority of them having issues related to both similar to the study conducted by Pai et al⁷.

The present study has reported that males have been affected by mild anxiety and insomnia on the other hand females experienced moderate levels of anxiety. i.e. females are susceptible more when compared to males similar to the results from Hamid et al¹². Moreover, from the results obtained we can see that 71.62 % of dentists faced financial struggles. Previous studies stated that economic crisis have a synergistic effect on anxiety and depression^{4,13,14}. Studies have also stated that economic crisis

is uniquely associated with depression and worsens anxiety related to the pandemic¹⁵.

As per literature anxiety and insomnia are inter-related i.e. insomnia and anxiety share a similar pathogenetic mechanism: hyperarousal produced by dysregulation of neurotransmitter systems including cholinergic and GABA¹³. Studies also suggest there is a bidirectional relationship between anxiety, insomnia, and depression over time i.e. higher anxiety levels lead to insomnia which in turn paves way for depression¹³.

Even after having knowledge about the nature of covid-19 spread and adopting various levels of workplace modifications this study's results show that dentists have faced anxiety and insomnia-related issues on various levels which were aggravated due to various reasons. Therefore, psychological, and social support is required for the dentists to overcome these burdens during such extraordinary events like the COVID-19 pandemic.

Conclusion

The study's findings indicate that while most dentists possess a solid grasp of the necessary adjustments to make in their clinical practice amidst the pandemic, a significant portion experience mild to moderate anxiety and insomnia. As a result, there is a need for further efforts to mitigate these adverse effects. This can be achieved through the implementation of strategies aimed at managing anxiety/insomnia through psychological treatment, and financial concerns such as financial management workshops. By this we can achieve the overall physical and mental well-being of an individual. These areas require greater attention to effectively address the consequences associated with the pandemic.

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